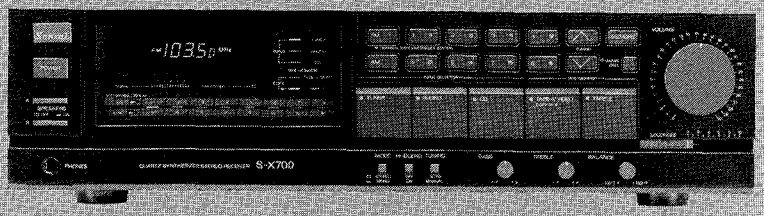
SERVICE MANUAL

QUARTZ SYNTHESIZER STEREO RECEIVER

SANSUI S-X700/X500



CAUTION

1. Parts identified by the ⚠ symbol on the schematic diagram and the parts list are critical for safety. Use only replacement parts that have critical characteristics recommended by the manufacturer.
2. Make leakage-current or resistance measurements to determine that exposed parts are acceptably insulated from the supply circuit before returning the appliance to the customer.

Sansui

SANSUI ELECTRIC CO., LTD.

•SPECIFICATIONS

S-X700

Audio section

Power output
Min. RMS, both channels driven, from 20 to 20,000 Hz with no more than 0.08% total harmonic distortion
43 watts per channel into 8 ohms

Total harmonic distortion
..... less than 0.08% at or below rated min. RMS power output

Load impecance ..... 4 ~ 16 ohms

Input sensitivity and impedance (1 kHz)
PHONO ..... 2.5 mV/47 kohms
CD, TAPE PLAY ..... 150 mV/47 kohms

Frequency response (at 1 watt)
..... 10 to 70,000 Hz, +1 dB, —3 dB

Signal to noise ration (short-circuit, A-network)
PHONO ..... 73 dB
CD, TAPE PLAY ..... 95 dB

FM section

Tuning range ..... 88 to 108 MHz

Usable sensitivity
Mono IHF ..... 10.8 dBf (1.9 μV: T-100)

50 dB quieting sensitivity
Stereo ..... 37 dBf

Signal to noise ratio (at 65 dBf)
Stereo ..... 70 dB

Distortion (at 65 dBf)
Stereo ..... less than 0.2% at 1,000 Hz

Stereo separation ..... 40 dB at 1,000 Hz

AM section

Tuning range ..... 530 to 1,600 kHz

Usable sensitivity (Loop antenna)
..... 52 dB/m (398 μV/m)

Signal to noise ratio ..... 45 dB

Others

Power requirements ..... 120/220/240V 50/60 Hz
For U.S.A. and Canada
..... 120V (60 Hz)

Power consumption ..... 280 watts 330 VA Rated
420 watts Maximum

Dimensions ..... 430 mm (16-15/16") W
114 mm (4-1/2") H
362 mm (14-1/4") D

Weight ..... 8.2 kg (18.0 lbs) net
9.7 kg (21.4 lbs) packed

to be continued ►

S-X500

Audio section

Power output
Min. RMS, both channels driven, from 30 to 20,000 Hz with no more than 0.2% total harmonic distortion
30 watts per channel into 8 ohms

Total harmonic distortion
..... less than 0.2% at or below rated min. RMS power output

Load impecance ..... 4~16 ohms

Input sensitivity and impedance (1 kHz)
PHONO ..... 2.5 mV/47 kohms
CD, TAPE PLAY ..... 150 mV/47 kohms

Frequency response (at 1 watt)
..... 10 to 70,000 Hz, +1 dB, —3 dB

Signal to noise ration (short-circuit, A-network)
PHONO ..... 73 dB
CD, TAPE PLAY ..... 95 dB

FM section

Tuning range ..... 88 to 108 MHz

Usable sensitivity
Mono IHF ..... 10.8 dBf (1.9 μV: T-100)

50 dB quieting sensitivity
Stereo ..... 37 dBf

Signal to noise ratio (at 65 dBf)
Stereo ..... 70 dB

Distortion (at 65 dBf)
Stereo ..... less than 0.2% at 1,000 Hz

Stereo separation ..... 40 dB at 1,000 Hz

AM section

Tuning range ..... 530 to 1,600 kHz

Usable sensitivity (Loop antenna)
..... 52 dB/m (398 μV/m)

Signal to noise ratio ..... 45 dB

Others

Power requirements ..... 120/220/240V 50/60 Hz
For U.S.A. and Canada
..... 120V (60 Hz)

Power consumption ..... 190 watts 220 VA Rated
280 watts Maximum

Dimensions ..... 430 mm (16-15/16") W
114 mm (4-1/2") H
362 mm (14-1/4") D

Weight ..... 7.4 kg (16.3 lbs) net
8.6 kg (19.0 lbs) packed

* **Design and specifications subject to changes without notice for improvements.**
* **Due to local laws and regulations, this unit sold in some areas are not equipped with variable voltage selectors**

CAUTION

1. The symbols, UL, CSA, SA, BS, UK, EU, AS, SEV and XX (EXPORT) on the parts list and the schematic diagram mean followings respectively.

   UL ..... Manufactured for U.S.A market. (Underwriters Laboratories approved model.)
   CSA ..... Manufactured for Canadian market.
   SA ..... Manufactured for South African market.
   BS, UK ..... Manufactured for United Kingdom market.
   EU ..... Manufactured for European market.
   AS ..... Manufactured for Australian market.
   SEV ..... Manufactured for Swiss market.
   XX (EXPORT).. Standard Version.
   NON MARK..... Common Parts.

2. Some printed circuit boards are not supplied assembled.
   To separate these in this service manual, the stock numbers are not indicated for these boards. However, stock numbers for individual parts are indicated.

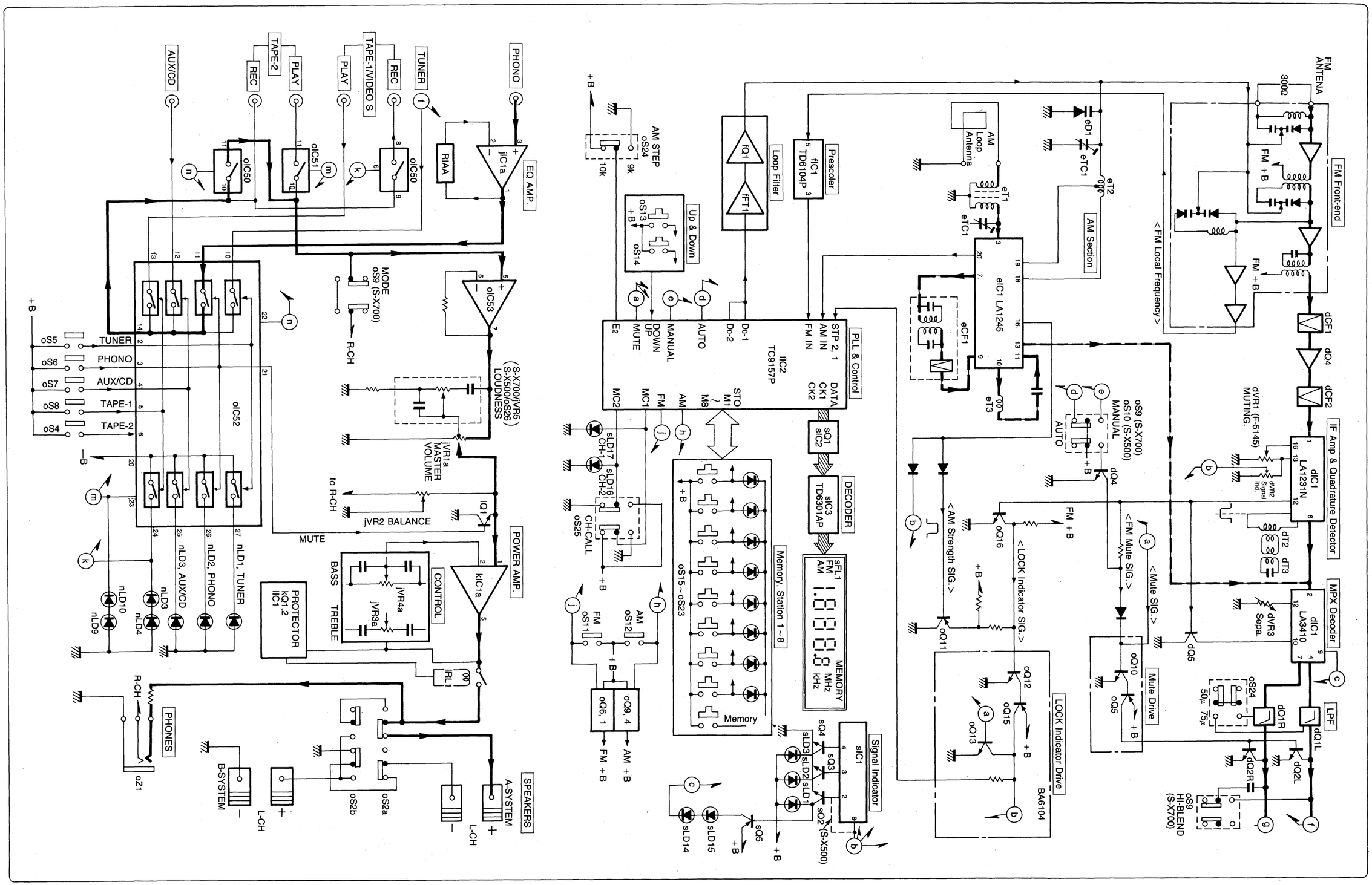
3. Since some capacitors and resistors are omitted from parts lists in this service manual, refer to the Common Parts List for capacitors & resistors, which was issued on February 1983.

4. Abbreviations in this service manual are as follows.

•Abbreviations List

C.R.	: Carbon Resistor
S.R.	: Solid Resistor
W.R.	: Wire Wound Resistor
M.R.	: Metal Film Resistor
F.R.	: Fusing Resistor
N.I.R.	: Non-Inflammable Resistor
R.A.	: Resistor Array
C.C.	: Ceramic Capacitor
C.T.	: Ceramic Capacitor, Temperature Compensation
E.C.	: Electrolytic Capacitor
E.L.	: Low Leakage Electrolytic Capacitor
E.B.	: Bi-Polar Electrolytic Capacitor
E.B.L.	: Low Leakage Bi-Polar Electrolytic Capacitor
Ta.C.	: Tantalum Capacitor
F.C.	: Film Capacitor
M.P.	: Metallized Paper Capacitor
P.C.	: Polystyrene Capacitor
C.A.	: Capacitor Array
V.R.	: Variable Resistor
SW.	: Switch
Chip R.	: Chip Resistor
Chip C.	: Chip Capacitor

1. BLOCK DIAGRAM



2. ADJUSTMENTS

2-1. FM Adjustment (See Fig. 2-1)

Fig. 2-1

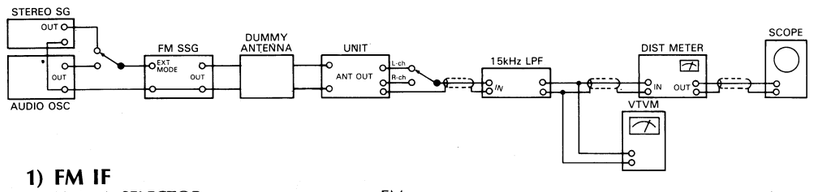
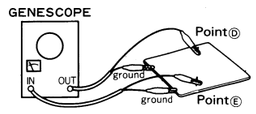


Fig. 2-2



1) FM IF

Note: 1. SELECTOR ..... FM
2. FM MUTING/MODE ..... OFF/MONO

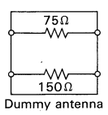
STEP	SUBJECT		FEED SIGNAL FROM	FEED SIGNAL TO	MEASURE OUTPUT	ADJUST	ADJUST FOR	REMARKS
1.	IF Coil Adj.		98MHz ANT Input 20dBf (14.8dB), 1kHz (100% MOD.), FM SSG	ANT terminal 300Ω	Between Point Ⓐ (Pin 13 of dIC2) & Earth (F-4853), DC Volt Meter	IFT Coil (Front-end, F-5415)	Max. DC Volt	
2.	Discriminator Coil Adj. In case of using Genescope	1	No Input	——	Between Point Ⓑ (Pin 7 of dIC1) & Point Ⓒ (Pin 10 of dIC1) (F-4853), DC Volt Meter	dT2 (F-4853)	DC 0V ± 30mV	•Repeat procedures as stated in subject 1 & 2.
		2	Output 80dB, Genescope	Point Ⓓ (dCF1)	Between Point Ⓔ (Pin 6 of dIC1) & Earth (F-4853)	dT3 (F-4853)	Steep linearity of S curve. Make symmetrical S curve.	
	Discriminator Coil Adj. In case of using Dist meter	1	98MHz ANT Input 65dBf (59.8dB), No MOD., FM SSG	ANT terminal 300Ω	Between Point Ⓑ (Pin 7 of dIC1) & Point Ⓒ (Pin 10 of dIC1) (F-4853), DC Volt Meter	dT2 (F-4853)	DC 0V ± 30mV	•Repeat procedures as stated in subject 1 & 2. •Since the IFT Coil has already adjusted, perform only a fine adjustment in this procedure.
		2	98MHz ANT Input 65dBf (59.8dB), 1kHz (100% MOD.), FM SSG	Same as above	•REC OUT L-CH or R-CH Dist Meter & SCOPE	dT3 (F-4853)	Min. THD	
3.	Signal Level Adj. <S-X700 only>		98MHz ANT Input 25dBf (19.8dB), 1kHz (100% MOD.), FM SSG	Same as above	•Signal LED	dVR2 (F-5415)	Turns ON first LED	

•ADJUSTMENT FOR FM

There are two kind in indication of FM SSG output attenuator
1. Attenuator with marking of 75Ω open ..... open indication type.
2. Attenuator with marking of 75Ω load or close ..... load or close indication type.

FM SG output level in this FM adjustment are described as open indication type.
To feed FM signal, a dummy antenna circuit as Fig. 2-3 must be connected between FM SG output and ANT terminal (300Ω) of the unit.

Fig. 2-3



- The following table shows relations among FM SG attenuator indication (dB), available power ratio (dBf) and antenna terminal voltage (dB/μV) in each indication type.

	FM SG Attenuator Indication	Available Power Ratio	Antenna Terminal Voltage
Open indication type	0 dB 66 dB	−0.8 dBf 65.2 dBf	−6 dB/μV 60 dB/μV
Load or close indication type	0 dB 60 dB	5.2 dBf 65.2 dBf	0 dB/μV 60 dB/μV

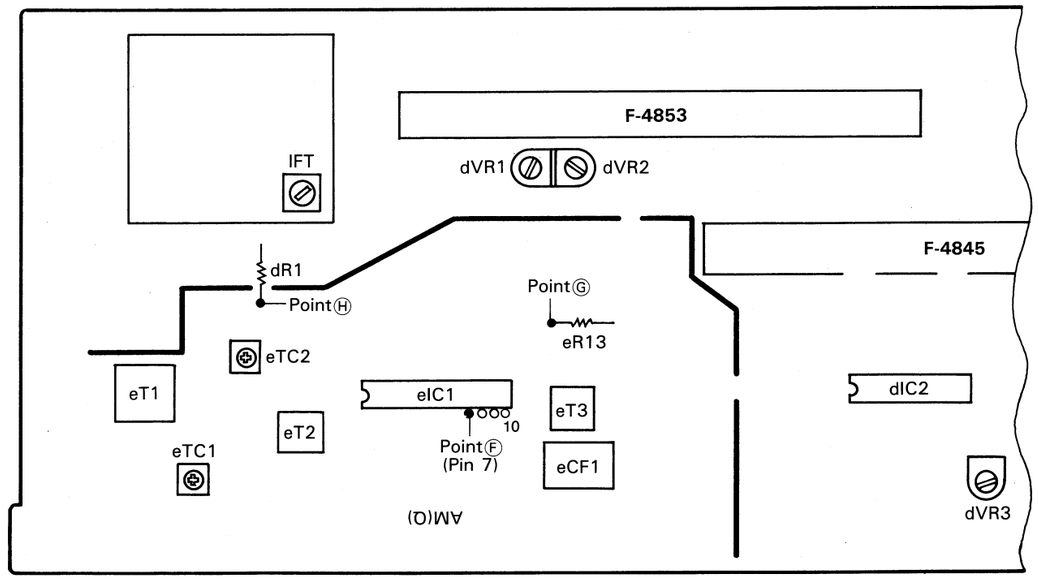
2) FM STEREO

1. FM MODE..... AUTO

STEP	SUBJECT	FEED SIGNAL FROM	FEED SIGNAL TO	MEASURE OUTPUT	ADJUST	ADJUST FOR	REMARKS
1.	Separation Adj.	98MHz ANT Input 65dBf (59.8dB), FM SSG, Pilot 19kHz (9% MOD.), L MODE 1kHz+Pilot (100% MOD.), STEREO SG.	ANT terminal 300Ω	REC OUT L-CH AC Volt Meter & SCOPE	——	Read the indication on	Confirm R→L-CH
				REC OUT R-CH AC Volt Meter & SCOPE	dVR3 (F-5415)	−30dB from the indication above.	
2.	Muting Level Adj.	98MHz ANT Input 25dBf (19.8dB), FM SSG, Pilot 19kHz (9% MOD.), L or R MODE 1kHz+Pilot (100% MOD.), STEREO SSG.	Same as above	Stereo indicator REC OUT L-CH or R-CH. AC Volt Meter & SCOPE	dVR1 (F-5415)	Stereo indicator turns ON or Output Signal comes out	

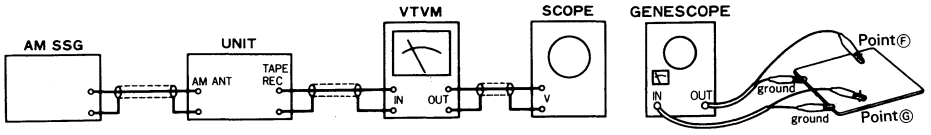
Fig. 2-4 F-4853 FM IF Amp. Board

Fig. 2-5



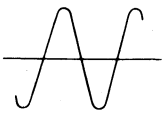
2-2. AM Adjustment

Fig. 2-6



1) AM IF, RF & Tuning

Note: 1. SELECTOR..... AM
2. Connect AM loop antenna AM to antenna terminal.

STEP	SUBJECT	FEED SIGNAL		MEASURE OUTPUT	ADJUST	ADJUST FOR	REMARKS
		FROM	TO				
1.	IF Coil Adj.	Genescope Output 80dB	Point Ⓕ (Pin No. 7 of elC1) (F-5415)	Between Point Ⓖ (eR13) & Earth	eCF1, eT3 (F-5415)	Max. Waveform	
2.	531kHz (or 530kHz) Tuning Adj.	No Input	—	Between Point Ⓗ (dR1, F-5415) & Earth DC Volt Meter	eT2 (F-5415)	1V±0.1V	•Repeat procedures as stated in subject 2 & 3.
3.	1602kHz (or 1600kHz) Tuning Adj.	No Input	—	Same as above	eTC2 (F-5415)	8V±0.1V	
4.	603kHz (or 600kHz) RF Adj.	603kHz (or 600kHz) ANT Input 0dB 400Hz (30% MOD.), AM SSG	ANT terminal	REC OUT L-CH or R-CH VTVM & Scope	eT1 (F-5415)	Max. Output	
5.	1404kHz (or 1400kHz) RF Adj.	1400kHz (or 1400kHz) ANT Input 0dB 400Hz (30% MOD.), AM SSG	Same as above	REC OUT L-CHor R-CH VTVM & Scope	eTC1 (F-5415)	Max. Output	

•Abbreviations

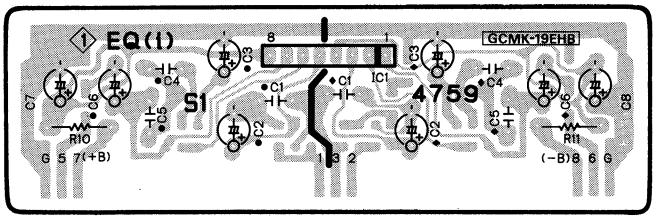
Equipment
AM FM Generator Oscilloscope..... Genescope
AM Standard Signal Generator..... AM SSG
FM Standard Signal Generator ..... FM SSG
FM Stereo Generator..... Stereo SG
Oscilloscope ..... Scope
Audio Oscillator ..... Audio Osc.
Distortion Meter..... Dist. Meter

Others
Antenna ..... ANT.
Modulation..... MOD.
Total Harmonic Distortion ..... T.H.D.

3. PARTS LOCATION ON BOARD

3-1. F-4759 EQ. Amp. Board

Component Side



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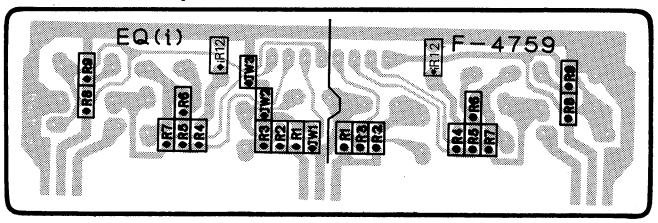
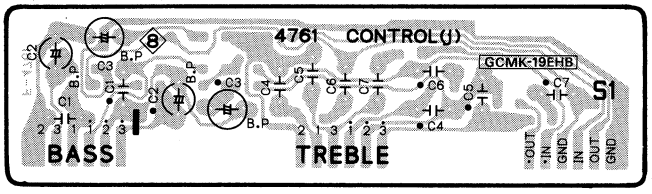


3-2. F-4761 Tone Control Board

Component Side



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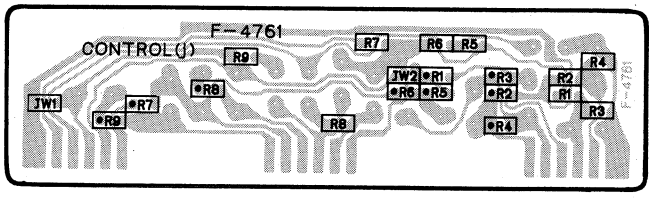
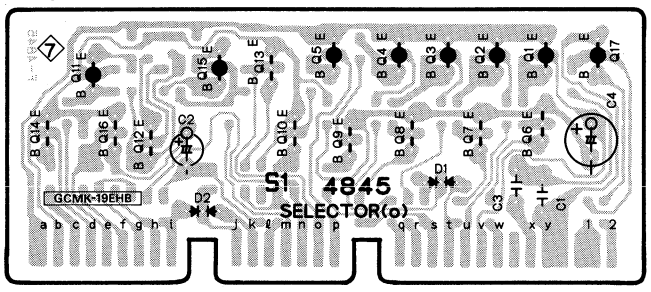


3-3. F-4845 AM/FM Band Selector Board

Component Side



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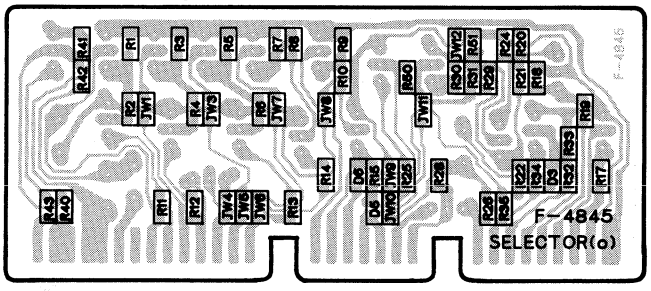
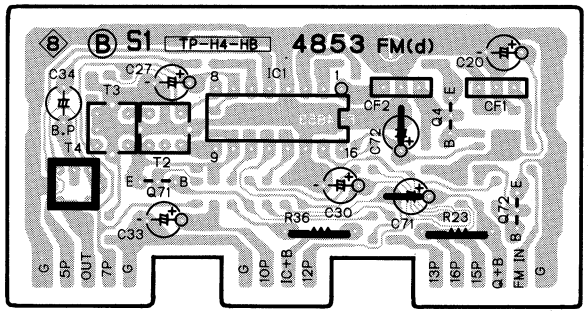


3-4. F-4853 FM IF Amp. Board

Component Side



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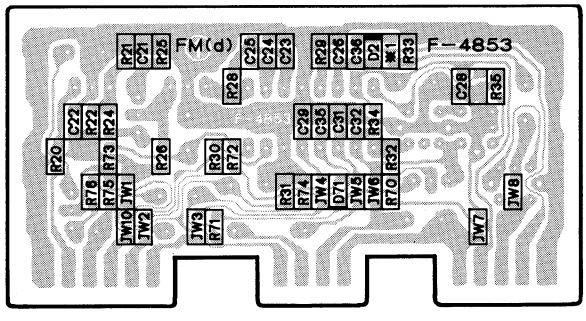

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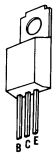

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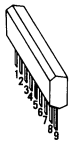

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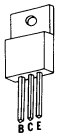

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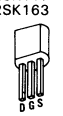

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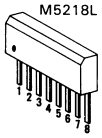

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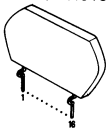

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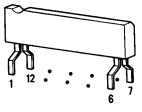

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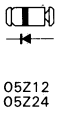

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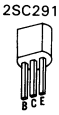

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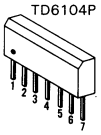

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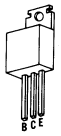

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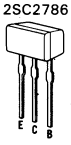

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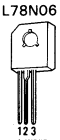

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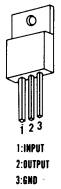

LA1231N
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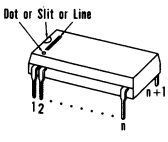
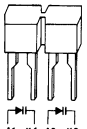
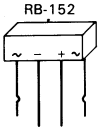
LC7815H
LC4066BH
TC9157AP
TD6301AP



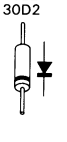
KV1236Z2



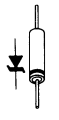
RB-152



1S1588
1S2473D
10E2
30D2

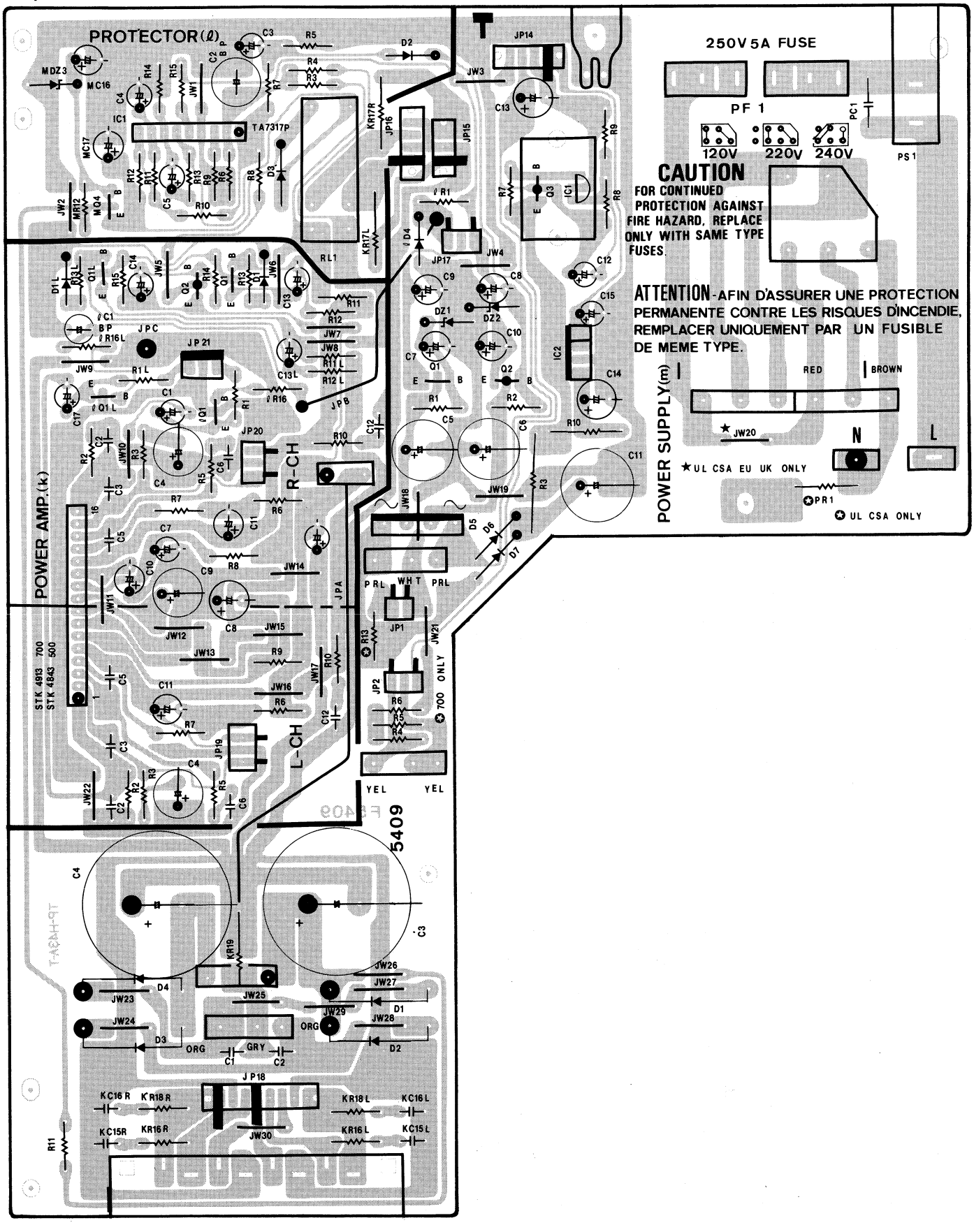


05Z12
05Z24



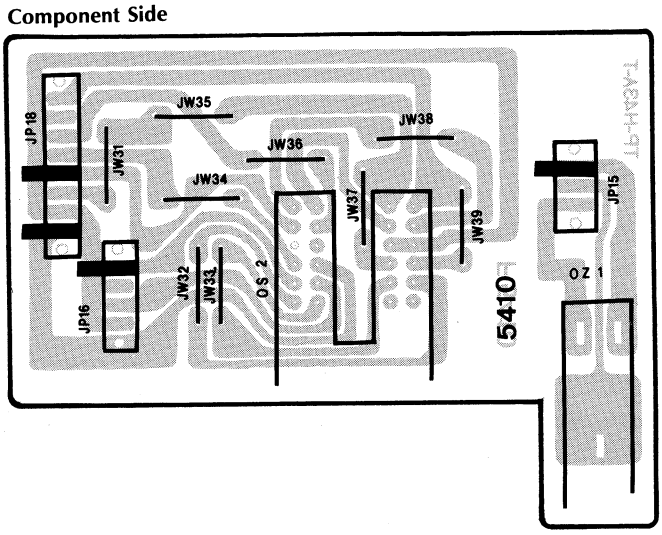
3-5. F-5409 Power Amp. & Power Supply Board

Component Side



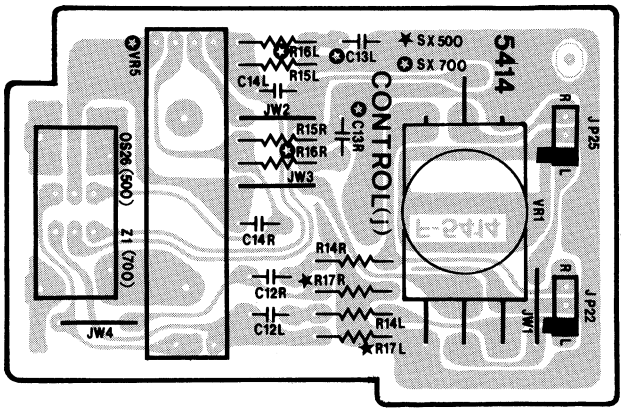
3-6. F-5410 Speaker Switch Board

Component Side



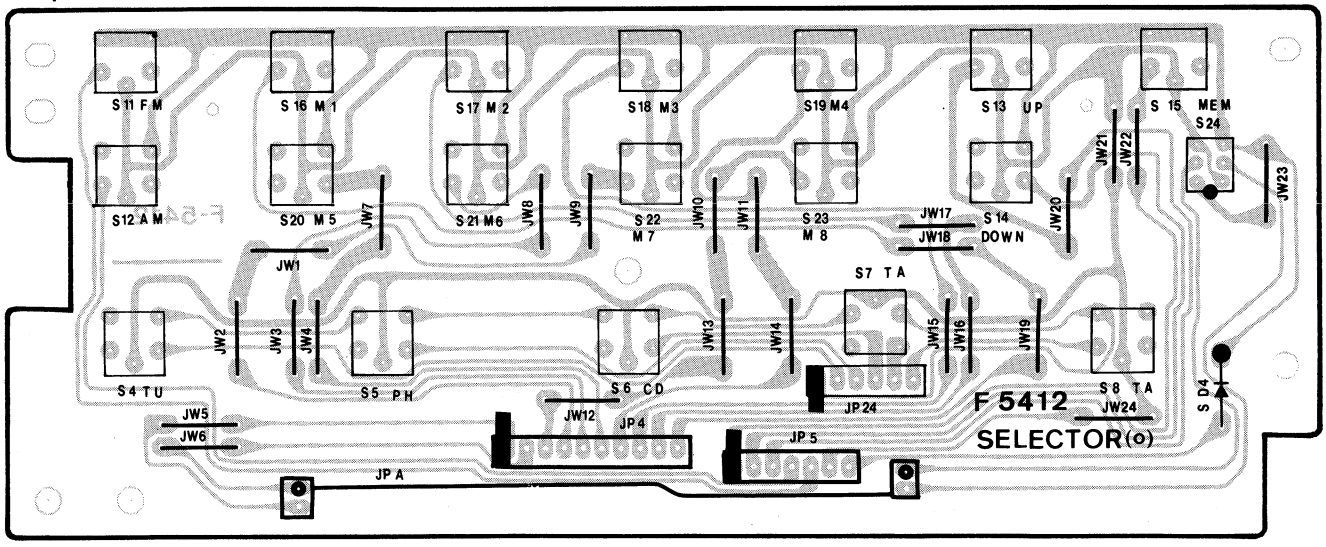
3-7. F-5414 Master Volume Board

Component Side



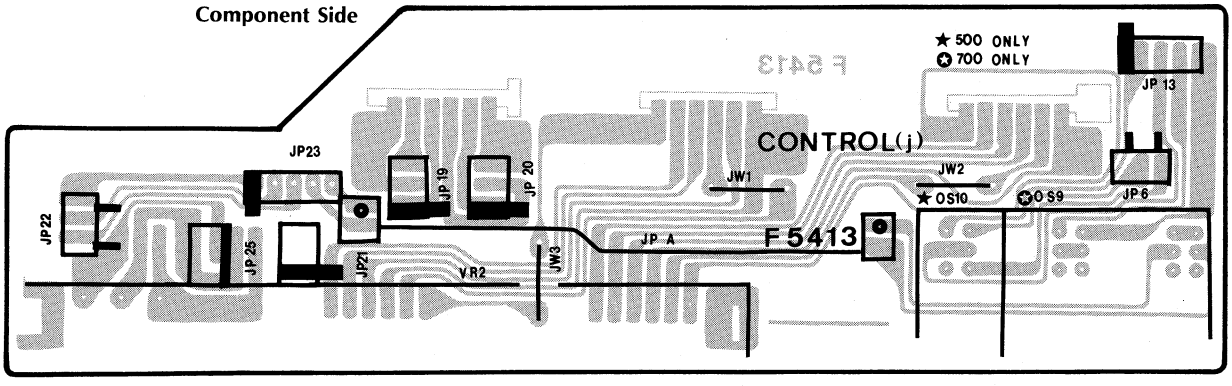
3-8. F-5412 Control Switch Board

Component Side



3-9. F-5413 Tone Control Board

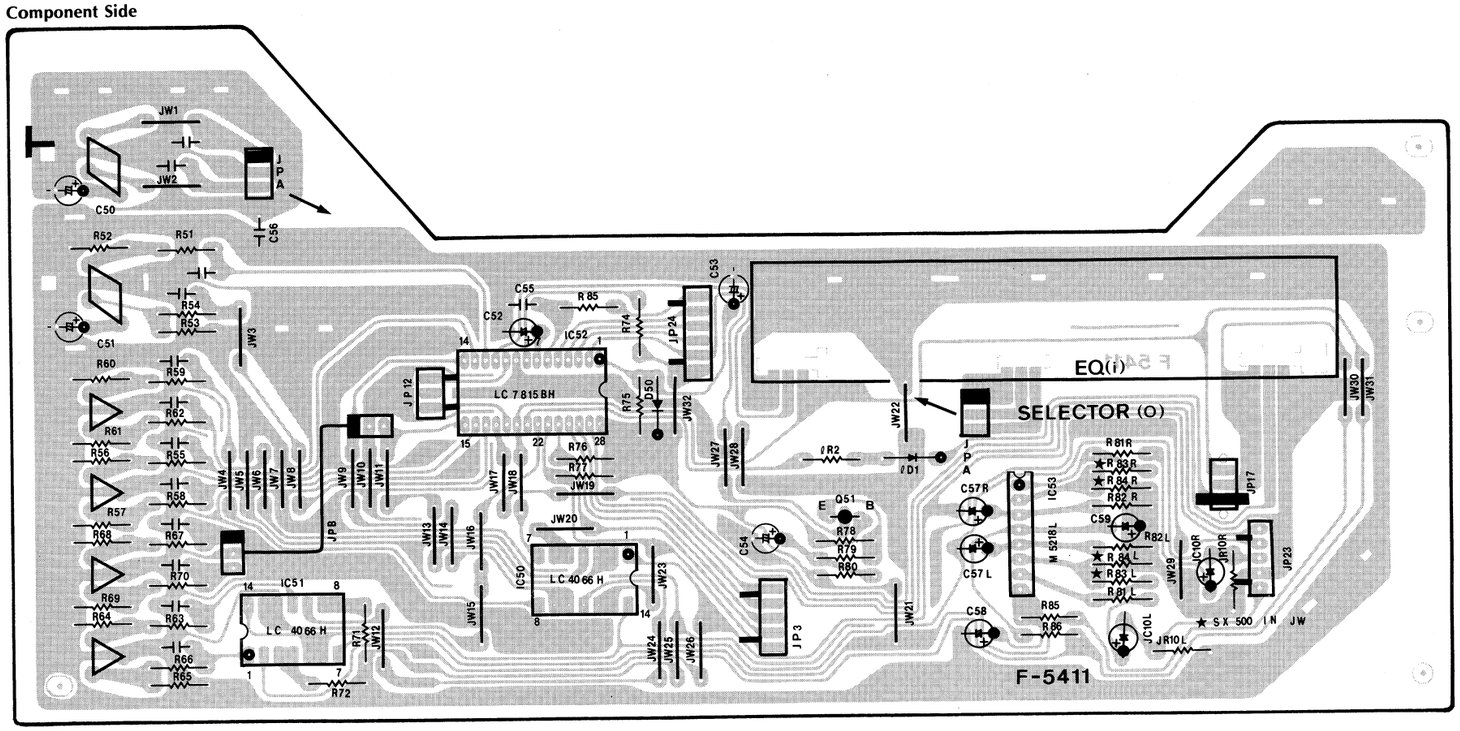
Component Side



2SC1845
2SC2878
2SB527
2SB834
2SD357
TA7317P
2SC2910
TD6104P
2SB507
2SB825
M5218L
2SK117
2SK163
2SA1048
2SA1115
2SA1175
2SC2458
2SC2603
2SC2785
2SC3327
DTA124ES
DTC124ES
L78N06
2SC2786
1:INPUT 2:GND 3:OUTPUT
STK4843
STK4913
BA6104
LA1231N
LA1245
LA3410A
LC7815H
LC4066BH
TC9157AP
TD6301AP
AN78M06
Dot or Slit or Line
1:INPUT 2:OUTPUT 3:GND
DT5C144E
M5236L
1:OUTPUT 2:GND 3:INPUT
RB-152
KV1236Z2
MC921
RLS-73
1S1588
1S2473D
10E2
30D2
05Z12
05Z24

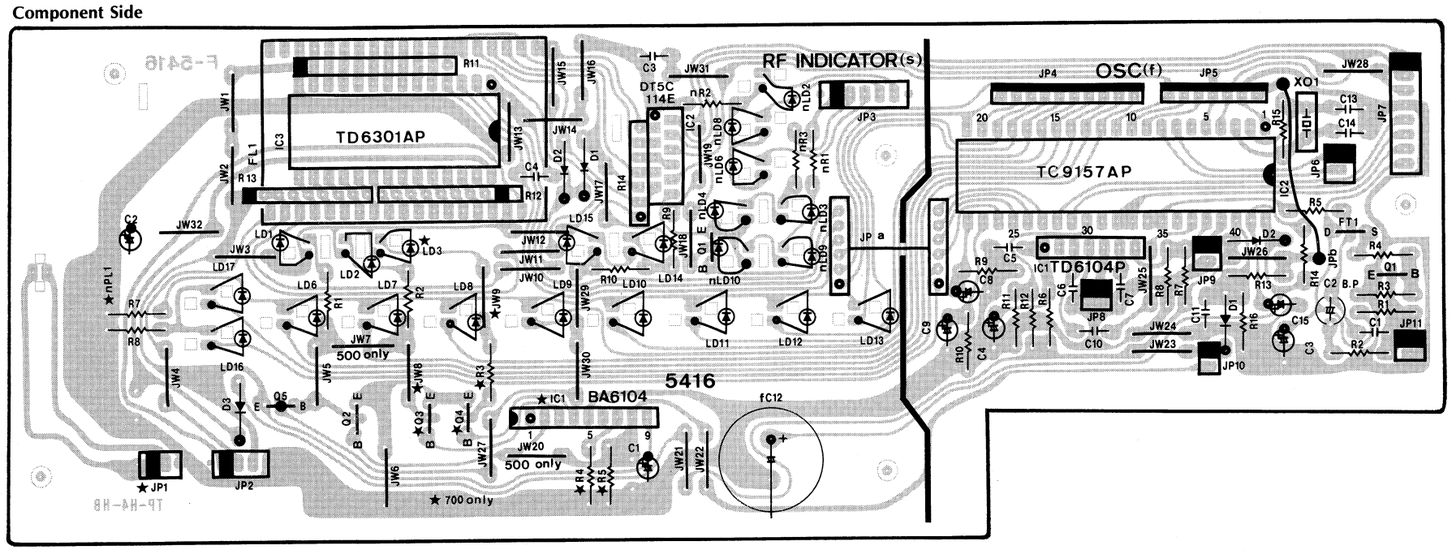
3-10. F-5411 Input Terminal & Selector IC Board

Component Side



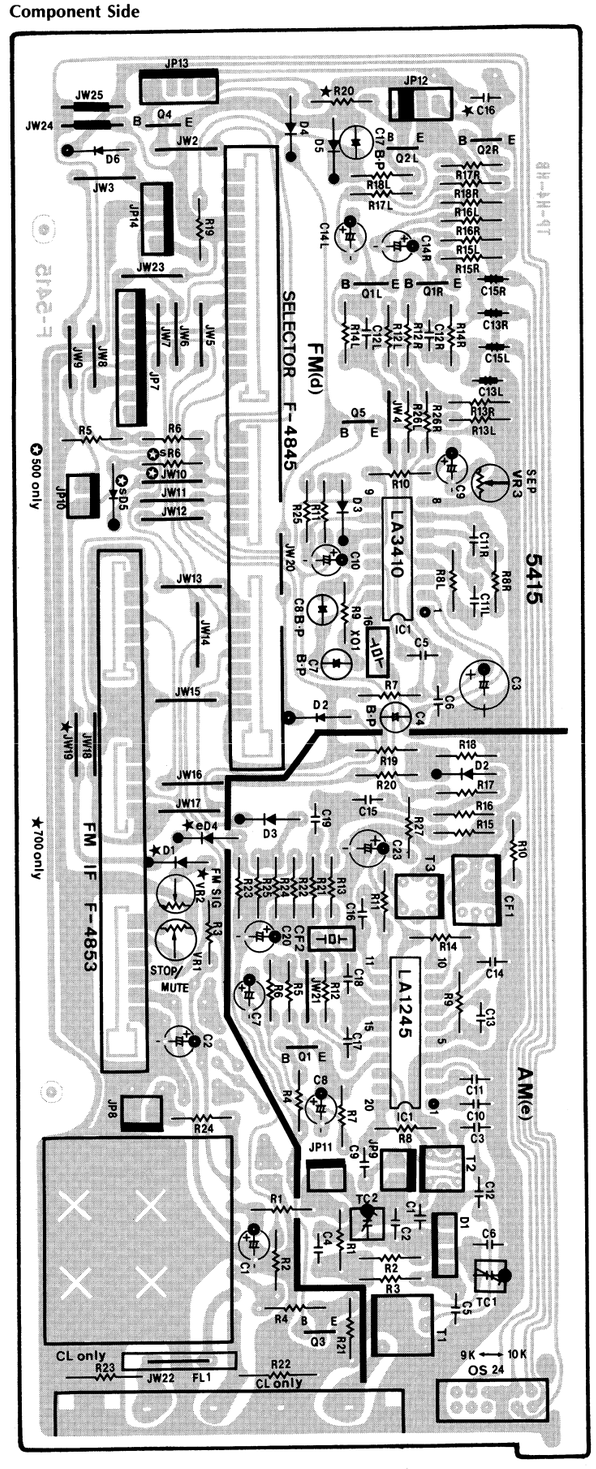
3-11. F-5416 Display Tube & PLL Control IC Board

Component Side



3-12. F-5415 Tuner Board

Component Side



4. ELECTRIC PARTS LIST OF BOARD

4-1. F-4759 EQ. Amp. Board (Stock No. 00852601)

Parts No.	Stock No.	Description
•IC		
iIC1	46078900	M5218L
iJW1	46741100	Cross Conductor (Chip)
iJW2	46741100	Cross Conductor (Chip)
iJW3	46741100	Cross Conductor (Chip)
iR1	46752400	100kΩ 1/8W Chip R.
iR2	46746800	470Ω 1/8W Chip R.
iR3	46752400	100kΩ 1/8W Chip R.
iR4	46746900	510Ω 1/8W Chip R.
iR5	46746900	510Ω 1/8W Chip R.
iR6	46750800	22kΩ 1/8W Chip R.
iR7	46753500	300kΩ 1/8W Chip R.
iR8	46746800	470Ω 1/8W Chip R.
iR9	46752400	100kΩ 1/8W Chip R.
iR12	46752400	100kΩ 1/8W Chip R.
iC4	46282400	3300pF 50V F.C.
iC5	46283000	0.012μF 50V F.C.

4-2. F-4761 Tone Control Board

Parts No.	Stock No.	Description
jJW1	46741100	Cross Conductor (Chip)
jJW2	46741100	Cross Conductor (Chip)
jR1	46750200	12kΩ 1/8W Chip R.
jR2	46748200	1.8kΩ 1/8W Chip R.
jR3	46753400	270kΩ 1/8W Chip R.
jR4	46751000	27kΩ 1/8W Chip R.
jR5	46751700	51kΩ 1/8W Chip R.
jR6	46748400	2.2kΩ 1/8W Chip R.
jR7	46749400	5.6kΩ 1/8W Chip R.
jR8	46749600	6.8kΩ 1/8W Chip R.
jR9	46747200	680Ω 1/8W Chip R.
jC1	46283600	0.039μF 50V F.C.
jC2	46937000	0.22μF 50V E.B.
jC3	48101500	100μF 6.3V E.B.
jC4	46281800	1000pF 50V F.C.
jC5	46282800	8200pF 50V F.C.
jC6	46282700	6800pF 50V F.C.

4-3. F-4845 AM/FM Band Selector Board (Stock No. 00988201)

Parts No.	Stock No.	Description
•Transistor		
oQ1	46367001	2SA1115
	or 46367201	2SA1048
	or 46392001	2SA1175
oQ4	46367001	2SA1115
	or 46367201	2SA1048
	or 46392001	2SA1175
oQ5	46367001	2SA1115
	or 46367201	2SA1048
	or 46392001	2SA1175

Parts List <F-4845>

Parts No.	Stock No.	Description
oQ6	46367101	2SC2603
	or 46367301	2SC2458
	or 46391901	2SC2785
oQ9	46367101	2SC2603
	or 46367301	2SC2458
	or 46391901	2SC2785
oQ10	46367101	2SC2603
	or 46367301	2SC2458
	or 46391901	2SC2785
oQ11	46367001	2SA1115
	or 46367201	2SA1048
	or 46392001	2SA1175
oQ12	46367101	2SC2603
	or 46367301	2SC2458
	or 46391901	2SC2785
oQ13	46367101	2SC2603
	or 46367301	2SC2458
	or 46391901	2SC2785
oQ14	46367101	2SC2603
	or 46367301	2SC2458
	or 46391901	2SC2785
oQ15	46367001	2SA1115
	or 46367201	2SA1048
	or 46392001	2SA1175
oQ16	46367101	2SC2603
	or 46367301	2SC2458
	or 46391901	2SC2785
oQ17	46367101	2SC2603
	or 46367301	2SC2458
	or 46391901	2SC2785
•Diode		
oD1	46464000	MC921 (Chip)
oD2	46464000	MC921 (Chip)
oD3	46852000	RLS-73 (Chip)
oD5	46852000	RLS-73 (Chip)
oD6	46852000	RLS-73 (Chip)
oJW1	46741100	Cross Conductor (Chip)
oR1	46749200	4.7kΩ 1/8W Chip R.
oR2	46750000	10kΩ 1/8W Chip R.
oR7	46749200	4.7kΩ 1/8W Chip R.
oR8	46750000	10kΩ 1/8W Chip R.
oR9	46749200	4.7kΩ 1/8W Chip R.
oR10	46750000	10kΩ 1/8W Chip R.
oR11	46750000	10kΩ 1/8W Chip R.
oR14	46750000	10kΩ 1/8W Chip R.
oR15	46751600	47kΩ 1/8W Chip R.
oR17	46750000	10kΩ 1/8W Chip R.
oR18	46748200	1.8kΩ 1/8W Chip R.
oR19	46747000	560Ω 1/8W Chip R.
oR20	46750800	22kΩ 1/8W Chip R.
oR21	46749200	4.7kΩ 1/8W Chip R.
oR22	46749200	4.7kΩ 1/8W Chip R.
oR25	46751600	47kΩ 1/8W Chip R.
oR26	46752400	100kΩ 1/8W Chip R.
oR28	46752400	100kΩ 1/8W Chip R.
oR29	46749200	4.7kΩ 1/8W Chip R.
oR30	46749000	3.9kΩ 1/8W Chip R.
oR31	46754600	820kΩ 1/8W Chip R.
oR32	46750400	15kΩ 1/8W Chip R.
oR33	46752200	82kΩ 1/8W Chip R.
oR34	46750000	10kΩ 1/8W Chip R.
oR35	46750000	10kΩ 1/8W Chip R.
oR40	46748800	3.3kΩ 1/8W Chip R.
oR41	46747600	1kΩ 1/8W Chip R.
oR42	46748800	3.3kΩ 1/8W Chip R.
oR43	46747600	1kΩ 1/8W Chip R.
oR50	46747400	820Ω 1/8W Chip R.
oR51	46750800	22kΩ 1/8W Chip R.

4-4. F-4853 FM IF Amp. Board (Stock No. 00967101)

Parts No.	Stock No.	Description
•Transistor		
dQ4	46393201	2SC2786
•IC		
dIC1	07191200	LA1231N
•Diode		
dD2	46852000	RLS-73 (Chip)
dJW1	46741100	Cross Conductor (Chip)
dJW2	46741100	Cross Conductor (Chip)
dJW3	46741100	Cross Conductor (Chip)
dJW4	46741100	Cross Conductor (Chip)
dJW5	46741100	Cross Conductor (Chip)
dJW6	46741100	Cross Conductor (Chip)
dJW7	46741100	Cross Conductor (Chip)
dJW8	46741100	Cross Conductor (Chip)
dJW9	46741100	Cross Conductor (Chip)
dR20	46745800	180Ω 1/8W Chip R.
dR21	46747000	560Ω 1/8W Chip R.
dR22	46747600	1kΩ 1/8W Chip R.
⚠dR23	46228700	56Ω 1/2W N.I.R.
dR24	46745200	100Ω 1/8W Chip R.
dR25	46747400	820Ω 1/8W Chip R.
dR26	46746600	390Ω 1/8W Chip R.
dR28	46746400	330Ω 1/8W Chip R.
dR29	46752400	100kΩ 1/8W Chip R.
dR30	46750000	10kΩ 1/8W Chip R.
dR31	46750200	12kΩ 1/8W Chip R.
dR32	46750400	15kΩ 1/8W Chip R.
dR33	46752400	100kΩ 1/8W Chip R.
dR34	46751000	27kΩ 1/8W Chip R.
dR35	46748800	3.3kΩ 1/8W Chip R.
⚠dR36	46249000	56Ω 1W N.I.R.
dC21	46854500	22000pF 50V Chip C.
dC22	46854900	47000pF 50V Chip C.
dC23	46854900	47000pF 50V Chip C.
dC24	46854900	47000pF 50V Chip C.
dC25	46854900	47000pF 50V Chip C.
dC26	46778100	100pF 50V Chip C.
dC28	46854500	22000pF 50V Chip C.
dC29	46854500	22000pF 50V Chip C.
dC31	46854900	47000pF 50V Chip C.
dC32	46854900	47000pF 50V Chip C.
dC34	48102400	4.7μF 25V E.B.
dC35	46854500	22000pF 50V Chip C.
dCF1	46202500	Ceramic Filter SFE10.7MS2(RED)
	or 46202501	Ceramic Filter KBF10.7MU-NAG
dCF2	46202500	Ceramic Filter SFE10.7MS2(RED)
	or 46202501	Ceramic Filter KBF10.7MU-NAG
dT2	48072100	FM IF Coil
dT3	48072200	FM IF Coil

4-5. F-5409 Power Amp. & Power Supply Board (Stock No. 00987101 = S-X700/Stock No. 00989801 = S-X500)

Parts No.	Stock No.	Description
•Transistor		
kQ1	46127901	2SC2910
kQ2	46367001	2SA1115
	or 46367201	2SA1048
•IC		
kIC1	48065400	STK4913 (S-X700)
	46367600	STK4843 (S-X500)
•Diode		
kD1	03117600	1S2473T77
	or 46086000	1S1588TP-3
⚠kR6	46230200	1kΩ 1/2W N.I.R.
⚠kR7	46230800	3.3kΩ 1/2W N.I.R.
⚠kR8	46229000	100Ω 1/2W N.I.R.
⚠kR9	46229900	560Ω 1/2W N.I.R.
⚠kR10	46227400	4.7Ω 1/2W N.I.R.
⚠kR11	48062200	0.22Ω 5W W.R.
⚠kR16	46227400	4.7Ω 1/2W N.I.R.
⚠kR17	46249700	220Ω 1W N.I.R.
⚠kR18	46227400	4.7Ω 1/2W N.I.R.
⚠kR19	46623100	10Ω 2W N.I.R.
kC12	46284100	0.1μF 50V F.C.
kC15	46284100	0.1μF 50V F.C.
kC16	46284100	0.1μF 50V F.C.
kC17	46302800	10μF 50V E.C.
•Transistor		
lQ1	46540801	2SC2878
	or 46604301	2SC3327
•IC		
lIC1	46207600	TA7317P
•Diode		
lD2	03117600	1S2473T77
	or 46086000	1S1588TP-3
lD3	03117700	10E-2
lD4	03117600	1S2473T77
	or 46086000	1S1588TP-3
lC1	48102100	22μF 16V E.B.
lC2	48104200	220μF 6.3V E.B.
lRL1	48183200	Relay, protector
•Transistor		
mQ1	03086101	2SD357
mQ2	03034401	2SB527
mQ3	48063301	2SB507
	or 48064601	2SB825
	or 48150701	2SB834
mQ4	03067401	2SC1845
•IC		
mIC1	48129000	M5236L
mIC2	46361200	L78N06
	or 48565500	AN78M06
•Diode		
⚠mD1	03115300	30D2
⚠mD2	03115300	30D2
⚠mD3	03115300	30D2
⚠mD4	03115300	30D2
⚠mD5	03117000	RB152-LFF
⚠mD6	03117700	10E-2
⚠mD7	03117700	10E-2
•Zener Diode		
mDZ1	46113800	05Z12-X
	or 46113900	05Z12-Y

Parts List <F-5409>

Parts No.	Stock No.	Description
mDZ2	46113800	05Z12-X
	or 46113900	05Z12-Y
mDZ3	46115900	05Z24-X
	or 46116000	05Z24-Y
⚠mR3	46908200	22Ω 3W N.I.R.
⚠mR10	46249500	150Ω 1W N.I.R.
⚠mR11	46229600	330Ω 1/2W N.I.R. (S-X700)
⚠	46229200	150Ω 1/2W N.I.R. (S-X500)
⚠mR13	48581900	56Ω 5W W.R. (S-X700)
mC3	08300300	6800μF 56V E.C. (S-X700)
	46363300	3900μF 42V E.C (S-X500)
mC4	08300300	6800μF 56V E.C. (S-X700)
	46363300	3900μF 42V E.C. (S-X500)
⚠pC1	46425800	0.01μF 400V C.C.
⚠	or 46943200	0.01μF 400V C.C.
⚠pF1	48267300	Fuse 5A 250V (S-X700-120V)
⚠	48266900	Fuse 2.5A 250V (S-X700-220/240V)
⚠	48267000	Fuse 3A 250V (S-X500-120V)
⚠	48266700	Fuse 1.5A 250V (S-X500-220/240V)
⚠pS1	46360300	Push SW., Power
qZ12	46947500	8P Terminal, Speaker

4-6. F-5410 Speaker Switch Board

Parts No.	Stock No.	Description
oS2	48582900	Push SW., SPEAKERS
oZ1	46579600	Jack, PHONES

4-7. F-5411 Input Terminal & Selector IC Board

(Stock No. 00987301 = S-X700/Stock No. 00990001 = S-X500)

Parts No.	Stock No.	Description
•Diode		
lD1	03117600	1S2473T77
	or 46086000	1S1588TP-3
•Transistor		
oQ51	46367001	2SA1115
	or 46367201	2SA1048
•IC		
olC50	46255000	LC4066BH
olC51	46255000	LC4066BH
olC52	46394800	LC7815H
olC53	46078900	M5218L
•Diode		
oD50	03117600	1S2473T77
	or 46086000	1S1588TP-3
qZ13	48528400	2P Terminal, PHONO, CD
qZ14	48528200	4P Terminal, TAPE-1/VIDEO, TAPE-2

4-8. F-5412 Control Switch Board

(Stock No. 00987401 = S-X700/Stock No. 00990101 = S-X500)

Parts No.	Stock No.	Description
oS4	48306900	Push SW., TUNER
oS5	48306900	Push SW., PHONO
oS6	48306900	Push SW., CD
oS7	48306900	Push SW., TAPE-1/VIDEO
oS8	48306900	Push SW., TAPE-2
oS11	48306900	Push SW., FM
oS12	48306900	Push SW., AM
oS13	48306900	Push SW., UP•Λ
oS14	48306900	Push SW., DOWN•V
oS15	48306900	Push SW., MEMORY
oS16	48306900	Push SW., STATION 1•9
oS17	48306900	Push SW., STATION 2•10
oS18	48306900	Push SW., STATION 3•11
oS19	48306900	Push SW., STATION 4•12
oS20	48306900	Push SW., STATION 5•13
oS21	48306900	Push SW., STATION 6•14
oS22	48306900	Push SW., STATION 7•15
oS23	48306900	Push SW., STATION 8•16
oS24	46463300	Push SW., CHANNEL CALL
•Diode		
sD4	03117600	1S2473T77
	or 46086000	1S1588TP-3

4-9. F-5413 Tone Control Board

Parts No.	Stock No.	Description
jVR2	48529900	50kΩ V.R., BALANCE•TREBLE•BASS
oS9	48529400	Push SW., MODE•HI-BLEND•TUNING (S-X700)
oS10	46549600	Push SW., TUNING/MODE (S-X500)

4-10. F-5414 Master Volume Board

Parts No.	Stock No.	Description
jVR1	48529700	150KBX2 V.R., VOLUME
jVR5	48529600	150kΩ (C)X2 V.R., LOUDNESS (S-X700)
oS26	48562300	Push SW., LOUDNESS (S-X500)

4-11. F-5415 Tuner Board (Stock No. 00987701 = S-X700/Stock No. 00990401 = S-X500)

Parts No.	Stock No.	Description
dZ1	46562600	FM Frontend Pack
•Transistor		
dQ1	46367101	2SC2603
	or 46367301	2SC2458
	or 46391901	2SC2785
dQ2	46540801	2SC2878
	or 46604301	2SC3327
dQ3	46719900	DTC124ES
dQ4	46719900	DTC124ES
dQ5	46719900	DTC124ES
•IC		
dIC1	48491000	LA3410A
dXO1	48128400	Ceramic OSC Element KBR-457HS
•Diode		
dD1	03117600	1S2473T77
	or 46086000	1S1588TP-3
dD2	03117600	1S2473T77
	or 46086000	1S1588TP-3
dD3	03117600	1S2473T77
	or 46086000	1S1588TP-3
dD4	03117600	1S2473T77
	or 46086000	1S1588TP-3
dD5	03117600	1S2473T77
	or 46086000	1S1588TP-3
dD6	03117600	1S2473T77
	or 46086000	1S1588TP-3
⚠dR3	46227800	10Ω 1/2W N.I.R.
⚠dR7	46228200	22Ω 1/2W N.I.R.
dC4	48102000	10μF 16V E.B.
dC6	46692800	1000pF 50V F.C.
dC7	48103200	0.47μF 50V E.B.
dC8	48103400	1μF 50V E.B.
dC12	46694400	4700pF 50V F.C.
dC13	46696100	0.024μF 50V F.C.
dC15	46695500	0.013μF 50V F.C.
dC16	46697300	0.075μF 50V F.C. (S-X700)
dC17	48103500	2.2μF 50V E.B.

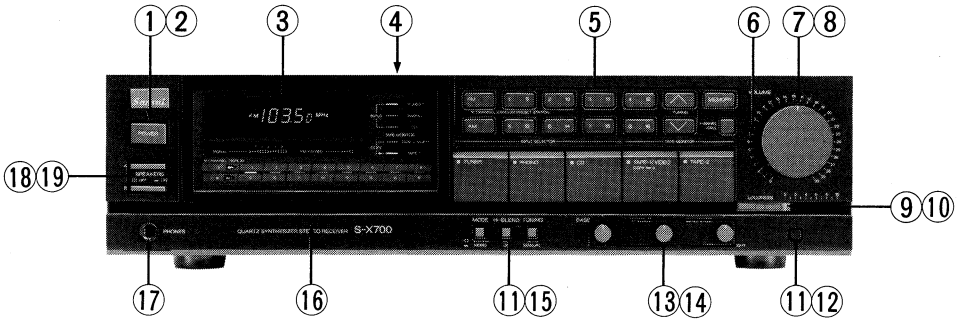
Parts No.	Stock No.	Description
dVR1	46634300	10kΩ S.V.R., MUTE
dVR2	46634700	47kΩ S.V.R., Signal Level
dVR3	46635100	220kΩ S.V.R., VCO
•Transistor		
eQ1	46367101	2SC2603
	or 46367301	2SC2458
	or 46391901	2SC2785
•IC		
eIC1	07237200	LA1245
eD1	46146300	Variable Capacitance, Diode KV1236Z2
•Diode		
eD2	03117600	1S2473T77
	or 46086000	1S1588TP-3
eD3	03117600	1S2473T77
	or 46086000	1S1588TP-3
eD4	03117600	1S2473T77 (S-X700)
	or 46086000	1S1588TP-3 (S-X700)
⚠eR27	46228200	22Ω 1/2W N.I.R.
eC16	46695200	0.01μF 50V F.C.
eTC1	46437400	Trimmer Capacitor 20pF
eTC2	46437400	Trimmer Capacitor 20pF
eCF1	48069800	Ceramic Filter CFLZ450
eCF2	46578100	Ceramic Filter BFU-450C10N
eT1	48528900	AM ANT Coil
eT2	46394700	AM OSC Coil
eT3	46369600	AM IF Coil
oS24	48529800	Slide SW., de-emphasis
qZ15	46547300	4P Terminal, ANTENNA
•Diode		
sD5	03117600	1S2473T77 (S-X500)
	or 46086000	1S1588TP-3 (S-X500)

4-12. F-5416 Display Tube & PLL Control IC Board (Stock No. 00987801 = S-X700/Stock No. 00990501 = S-X500)

Parts No.	Stock No.	Description
•Transistor		
fQ1	46367101	2SC2603
	or 46367301	2SC2458
	or 46391901	2SC2785
•FET		
fFT1	46643501	2SK163-K2
	or 46643502	2SK163-L1
	or 46643601	2SK117-Y
	or 46643602	2SK117-GR
•IC		
fIC1	07225000	TD6104P
fIC2	48128000	TC9157AP
fXO1	07237700	Quartz Crystal NR-18
•Diode		
fD1	03117600	1S2473T77
	or 46086000	1S1588TP-3
fD2	03117600	1S2473T77
	or 46086000	1S1588TP-3
fC2	48103500	2.2μF 50V E.B.
fC3	48153700	47μF 16V E.C.
fC4	48154300	22μF 25V E.C.
fC8	48155800	1μF 50V E.C.
fC9	48155800	1μF 50V E.C.
fC12	48388400	4700μF 6.3V E.C.
fC15	48155200	0.1μF 50V E.C.
•LED		
nLD2	48272600	SEL2213C, TUNER
nLD3	48076200	SEL2913K, TAPE-1/VIDEO
nLD4	48076200	SEL2913K, TAPE-1/VIDEO
nLD6	48272600	SEL2213C, AUX/CD
nLD8	48272600	SEL2213C, PHONO
nLD9	48076200	SEL2913K, TAPE-2
nLD10	48076200	SEL2913K, TAPE-2
nPL1	48586200	12V 0.15A Pilot Lamp (S-X700)
•Transistor		
sQ1	46719900	DTC124ES
sQ2	46719900	DTC124ES
sQ3	46719900	DTC124ES (S-X700)
sQ4	46719900	DTC124ES (S-X700)
sQ5	46719800	DTA124ES
•IC		
sIC1	48054400	BA6104 (S-X700)
sIC2	48054300	DT5C144E
sIC3	46410100	TD6301AP
•Diode		
sD1	03117600	1S2473T77
	or 46086000	1S1588TP-3
sD2	03117600	1S2473T77
	or 46086000	1S1588TP-3
sD3	03117600	1S2473T77
	or 46086000	1S1588TP-3
sFL1	48170300	FL. Display Tube, FG78N2
•LED		
sLD1	48076200	SEL2913K, SIGNAL 1
sLD2	48076200	SEL2913K, SIGNAL 2
sLD3	48076200	SEL2913K, SIGNAL3 (S-X700)
sLD6	48272600	SEL2213C, CHANNEL DIS. 1/9
sLD7	48272600	SEL2213C, CHANNEL DIS. 2/10
sLD8	48272600	SEL2213C, CHANNEL DIS. 3/11
sLD9	48272600	SEL2213C, CHANNEL DIS. 4/12
sLD10	48272600	SEL2213C, CHANNEL DIS. 5/13
sLD11	48272600	SEL2213C, CHANNEL DIS. 6/14
sLD12	48272600	SEL2213C, CHANNEL DIS. 7/15
sLD13	48272600	SEL2213C, CHANNEL DIS. 8/16
sLD14	48272600	SEL2213C, FM STEREO
sLD15	48272600	SEL2213C, FM STEREO
sLD16	48076200	SEL2913K, CHANNEL DIS. 9~16
sLD17	48076200	SEL2913K, CHANNEL DIS. 1~8
sR11	46353000	10kΩX10 1/8W A.R.
sR12	46349300	10kΩX8 1/8W A.R.
sR13	46349300	10kΩX8 1/8W A.R.
sR14	46344700	1.8kΩX6 1/8W A.R.
sC1	48156400	10μF 50V E.C. (S-X700)
	48153500	22μF 16V E.C. (S-X500)
sC2	48152300	100μF 6.3V E.C.

5. OTHER PARTS

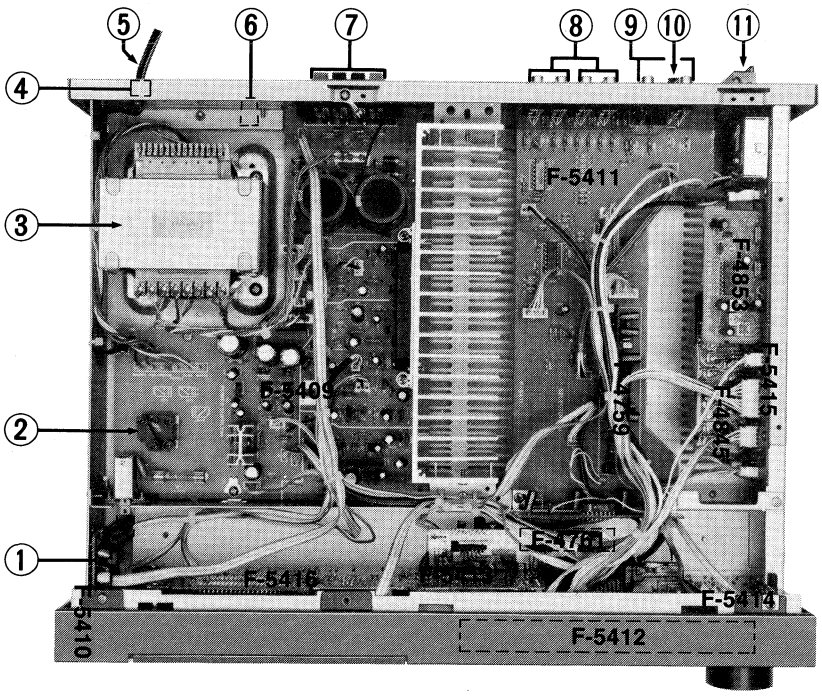
5-1. Front View



Parts List

Parts No.	Stock No.	Description
1	27244400	Knob, POWER
⚠ 2	46360300	Push SW., POWER
3	48170300	FL Display tube
4	27195000	Bonnet
5	48306900	Push SW., TUNER•PHONO•CD•TAPE-2• TAPE-1/VIDEO•FM•AM•UP•DOWN•MEMORY• 1/9•2/10•3/11•4/12•5/13•6/14•7/15•8/16
6	46463300	Push SW., CHANNEL CALL
7	27205000	Knob, VOLUME
8	48529700	150kΩ V.R., VOLUME
9	27305500	Knob, LOUDNESS (S-X700 only)
10	48529600	150kΩ V.R., LOUDNESS (S-X700 only)
11	27205200	Knob, LOUDNESS (S-X500)• TUNING•MODE•HI-BLEND (X-700)
12	48562300	Push SW., LOUDNESS (S-X500 only)
13	27206200	Knob, BASS•TREBLE•BALANCE
14	48529900	50kΩx2+250kΩ V.R., BASS•TREBLE•BALANCE
15	48529400	Push SW., MODE•HI-BLEND•TUNING (S-X700 only)
	46549600	Push SW., TUNING/MODE (S-X500 only)
16	27201300	Front Panel Ass'y (S-X700)
	27201400	Front Panel Ass'y (S-X500)
17	46579600	Jack, PHONES
18	27296200	Knob, SPEAKERS
19	48582900	Push SW., SPEAKERS

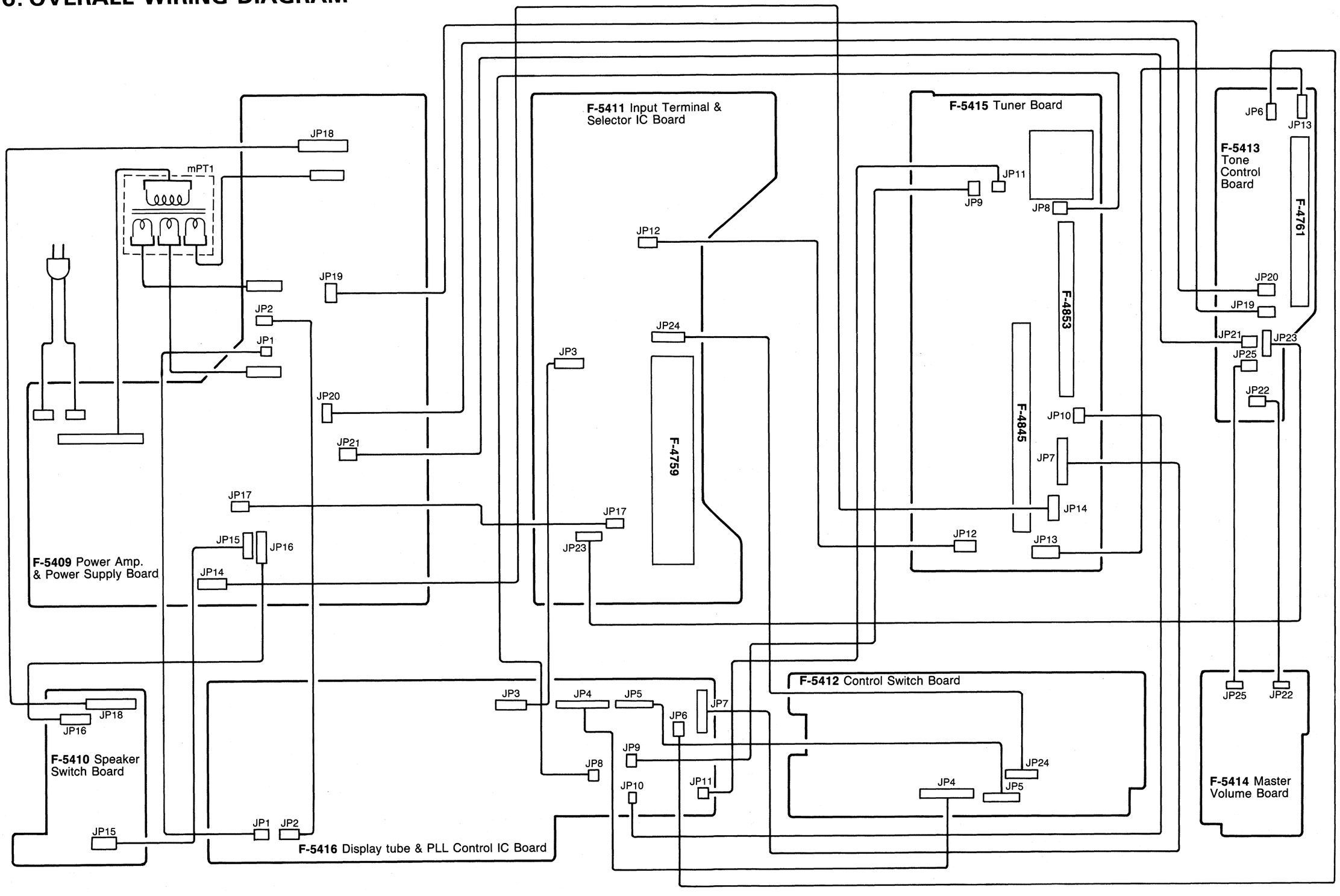
5-2. Top View



Parts List

Parts No.	Stock No.	Description
1	27205700	Joint shaft, power SW.
⚠ 2	46605200	Socket, voltage selector
⚠ 3	15026501	Power Transformer (S-X700-XX)
⚠	15026502	Power Transformer (S-X700-UL•CSA)
⚠	15026505	Power Transformer (S-X700-EU•UK•SEV)
⚠	15026601	Power Transformer (S-X500-XX)
⚠	15026602	Power Transformer (S-X500-UL•CSA)
⚠	15026605	Power Transformer (S-X500-EU•UK•SEV)
4	39106000	Strain Relief (XX)
	39104900	Strain Relief (UL•CSA•EU•UK•SEV)
⚠ 5	38005700	Power Supply Cord (XX)
⚠	48188000	Power Supply Cord (UL•CSA)
⚠	38004500	Power Supply Cord (EU•SEV)
⚠	38004300	Power Supply Cord (UK)
⚠ 6	07204700	Slide SW., Voltage Selector (EU•UK•SEV)
7	46947500	8P Terminal, SPEAKERS
8	48528200	4P Terminal, TAPE-1/VIDEO•TAPE-2
9	48528400	2P Terminal, PHONO•CD
10	22301510	Ground Terminal
11	46547300	4P Terminal, ANTENNA

6. OVERALL WIRING DIAGRAM

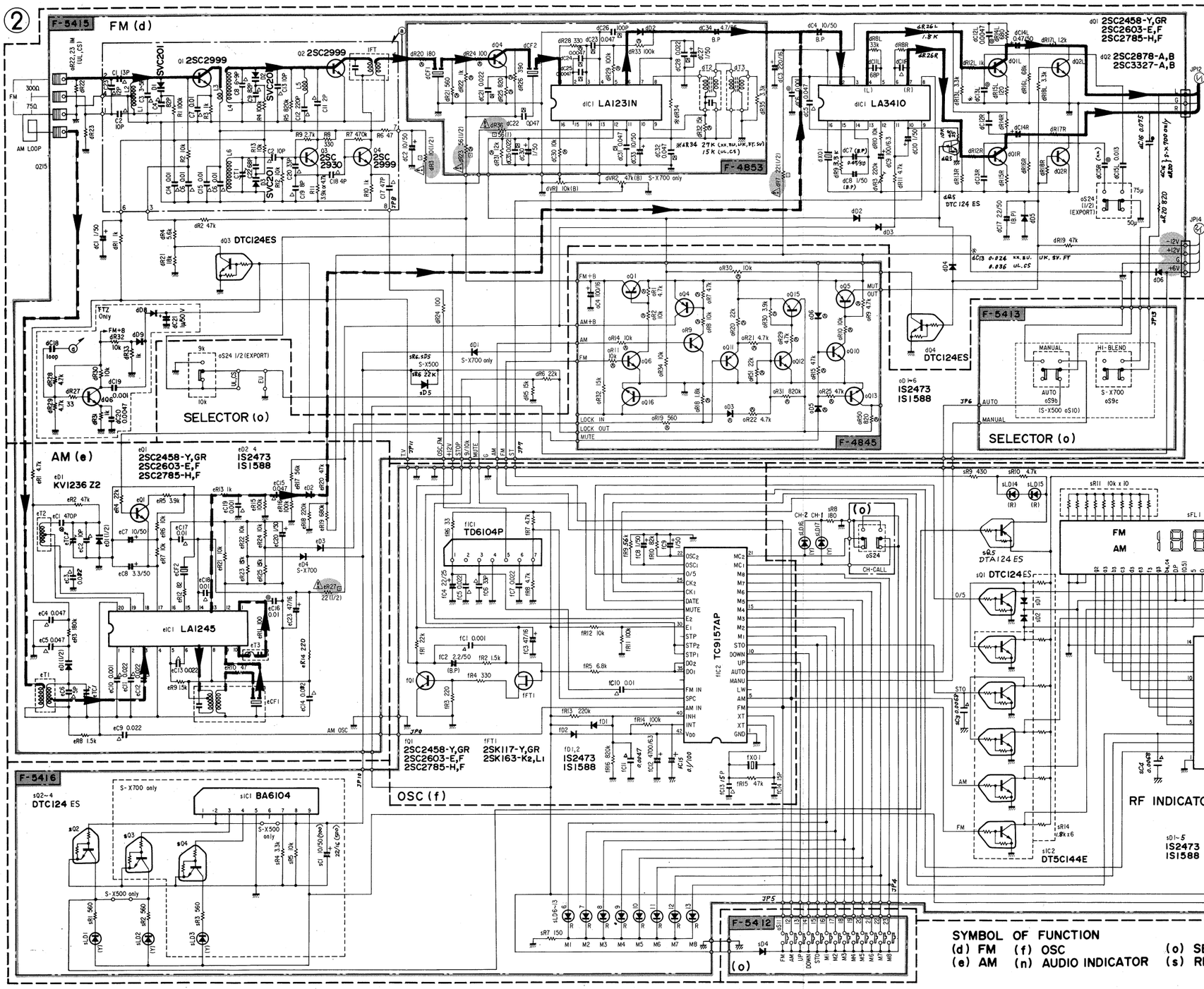


A	B	C	D	E	F	G	H

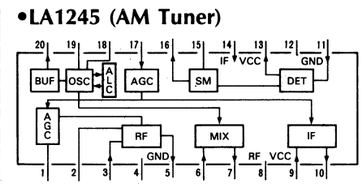
7. SCHEMATIC DIAGRAM & INTERIOR BLOCK OF ICs

7-1. Tuner Section

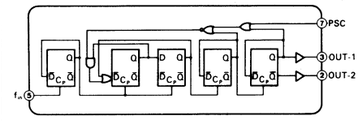
* Design and specifications subject to change without notice for improvement.
* La présention et les spécifications sont susceptibles d'être modifiées sans préavis par suites d'améliorations éventuelles.
* Änderungen, die dem technischen Fortschritt dienen, bleiben vorbehalten.



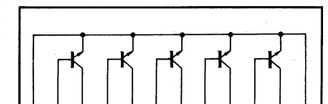
•LA1245 (AM Tuner)

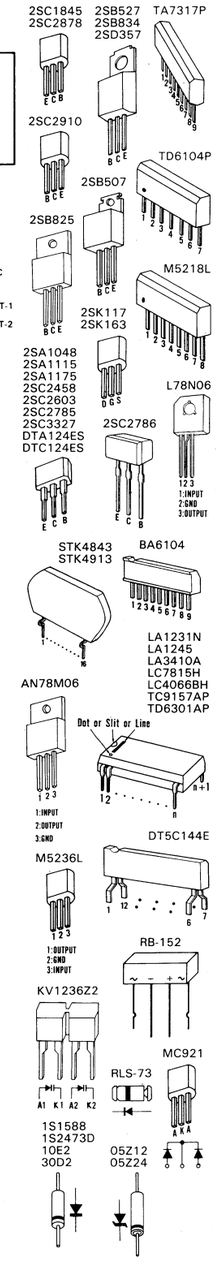


•TD6104P (Prescaler)



•DT5C144E (Transistor Array)





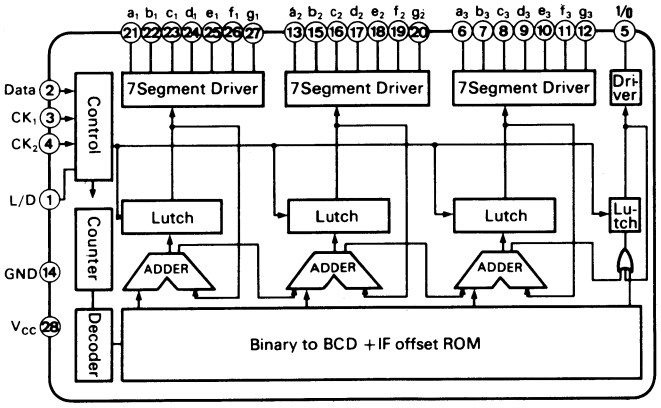
RESISTORS
Chip Resistors are 1/8 Watts.
Are, in ohms, 1/4 Watts ± 5% Tolerance Unless Otherwise Noted. k: kΩ, M: MΩ

CAPACITORS
J: ± 5% G: ± 2% F: 1%
Each D.C. Voltage shows the nominal value in volts at no input signal.
Electrolytic Capacitor : Capacitance (μF) / Volt (V)

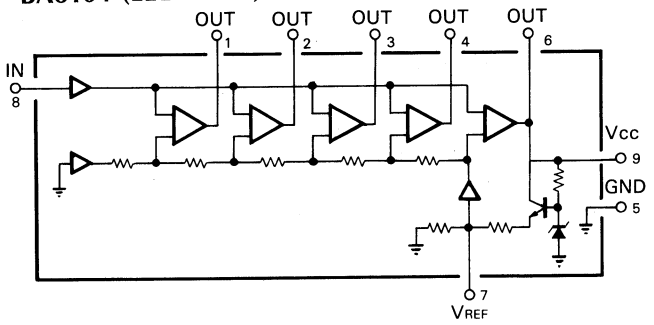
SYMBOL
△ Ceramic Capacitor
◉ Film Capacitor
□ Non-Inflammable Resistor
▣ Polystyrene
● Chip Component (Cylindrical type)
■ Chip Component

⚠ is Safety Part.
Use only replacement parts recommended by the manufacturer.

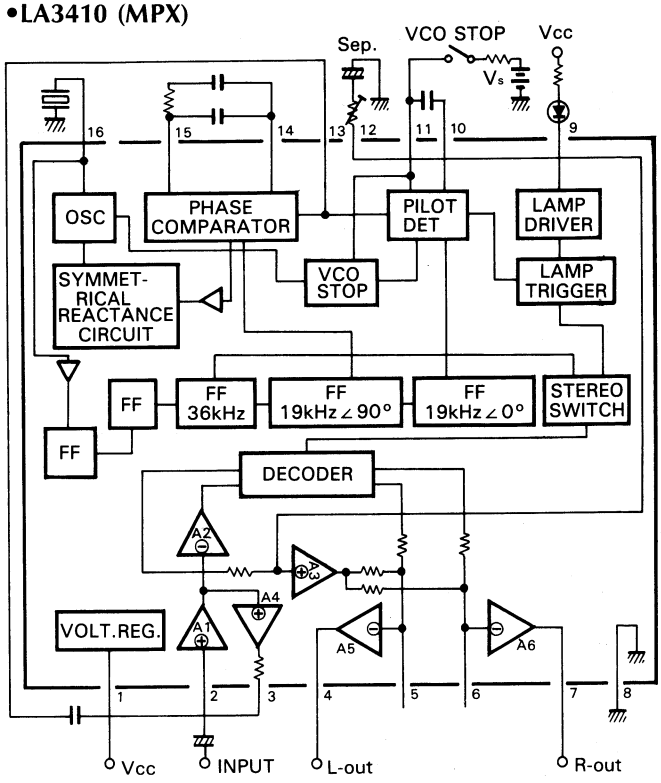
•TD6301P (7-Segment Decoder)



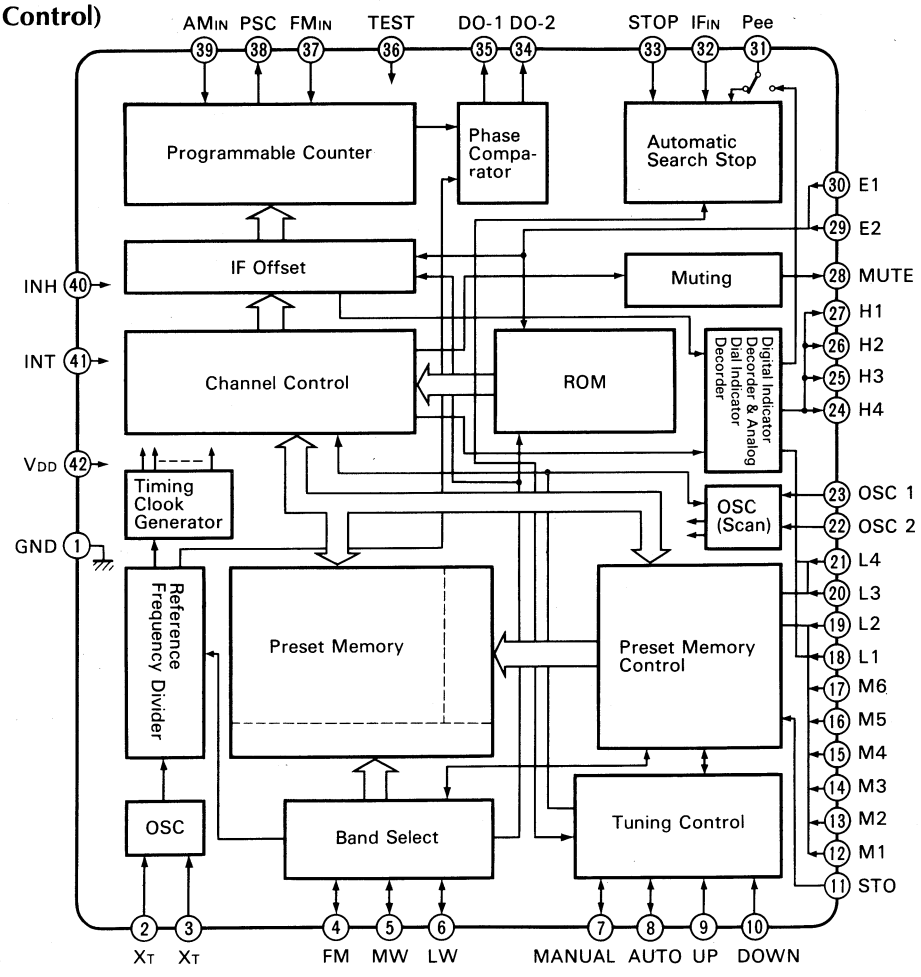
•BA6104 (LED Drive)



•LA3410 (MPX)



•TC9157AP (PLL & Control)

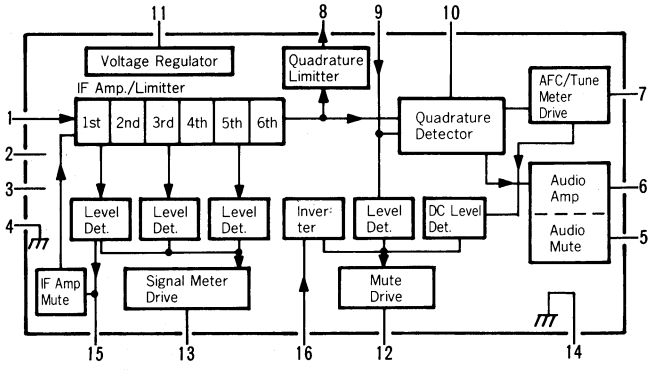


•Terminal Function of LSI-TC9157AP

Pin No.	Pin Name	Functions
2,3	XT $\overline{XT}$	Terminals to connect a quartz oscillator for generating a reference frequency.
4 5 6	FM MW LW	Terminals to input a signal for switching FM/MW/LW band.
7 8	MANU-AL AUTO	Terminal to input a signal for switching the manual operation to automatic search operation or vice versa in the UP/DOWN tuning mode. "H": Automatic, "L": Manual
9 10	UP DOWN	Terminals to input a signal from the tuning key. *In manual operation: When the key is kept depressed for 0.3 sec or more in one-step/one-push step feeding, the operation changes to fast forwarding; when the key is released, the operation stops at the next stop. In this case, even if there is a station on the way, the station is neglected. *In automatic search operation: When the key is depressed once, the automatic search operation starts and stops automatically after having selected the desired station.
11	STO	Terminal to input a signal for storing data in the preset memory unit. Input/output terminal in which a LED driver is provided. *When depressing the STO key, the STO lamp comes on. Next, when any desired memory No. key is depressed, the data on receiving frequency is written into the memory unit and the STO lamp goes off. *When the STO key is depressed and the memory No. key is not depressed, the frequency data is released automatically.
12 ~ 17	M1 ~ M6	Terminals to input a signal for designating memory address. Input/output terminals in which a LED driver is provided. *Terminals M1 to M6 designate the addresses of FM memory unit in FM receiving and the addresses of AM memory unit in AM receiving. *When depressing the STO key and any desired station key of M1 to M6, the data is written into the memory unit. *When depressing any desired station key of M1 to M6, the data is read out.
22 23	OSC 2 OSC 1	Terminal to connect a condenser and resistor for the oscillator for determinating the speed of AM automatic search operation. Terminal to connect a condenser and resistor for the oscillator for determinating the speed of FM automatic search operation.
24 25 26 27	0/5 CK2 CK1 DATA	Terminals to output the data for displaying the received frequency digitally and a timing signal. The data fed to the driver TD6301P for displaying a static frequency and the timing signal are outputted once only when the frequency is updated in such case as when the power supply is tuned on, the UP/DOWN key is depressed, the automatic scanning operation is made, the data are read out of the memory unit, or FM/AM is switched. In the ordinary receiving state, this terminal is fixed to a "L" level. *0/5: For displaying 50 kHz during FM receiving in Europe. *Data: Binary coded frequency data and receiving band. *CK-1, CK-2: Initialize and transfer clock signals.
28	MUTE	Terminal to output the muting signal. The terminal is kept in "L" level in ordinary state, and in "H" level in muting.

Pin No.	Pin Name	Functions
29 30	E2 E1	Terminals to input a signal for selecting destinations of Japan, USA, and Europe. *Inputs of terminals E1 and E2 are read and latched in INH = L state and in FM/AM switching. E1 E2 Mode 0 0 Japan 1 0 Europe 0 1 USA (MW 9kHz) 1 1 USA (MW 10kHz)
31	STOP 3	When a IF450 kHz signal is applied to this terminal during automatic search operation, the scanning operation stops.
32	STOP 2	Terminal to input a signal for performing the automatic search stop. When a "H" level signal is applied to STOP 1 and this terminal during automatic search operation, the scanning operation stops.
33	STOP 1	Terminal to input a signal for slowing the speed of scanning operation. When a "H" level signal is applied to this terminal during automatic search operation, the speed of scanning operation halves.
34 35	Do-2 Do-1	Terminals to output a signal from a phase comparator. These terminals can be used for FM and AM, separately, since the same signal is outputted from the terminals Do-1 and Do-2 at the same time.
36	TEST	Terminal to input a signal of test mode. Test mode in "H" level.
37	FMIN	Terminal to input a signal from the FM programmable counter. An amplifier is provided in the input.
38	PSC	Terminal to output a signal for controlling the Prescaler IC of TD6104P.
39	AMIN	Terminal to input a signal from the AM programmable counter. An amplifier is provided in the input.
40	INH	Terminal to input a signal of inhibit. Ordinary operation in "H" level; inhibit operation in "L" level.
41	INT	Terminal to input an initialize signal. This terminal changes to H level in the ordinary operation and to L level in the initialize operation.
42 1	VDD VND	Power supply terminals. 5V ± 0.5V.

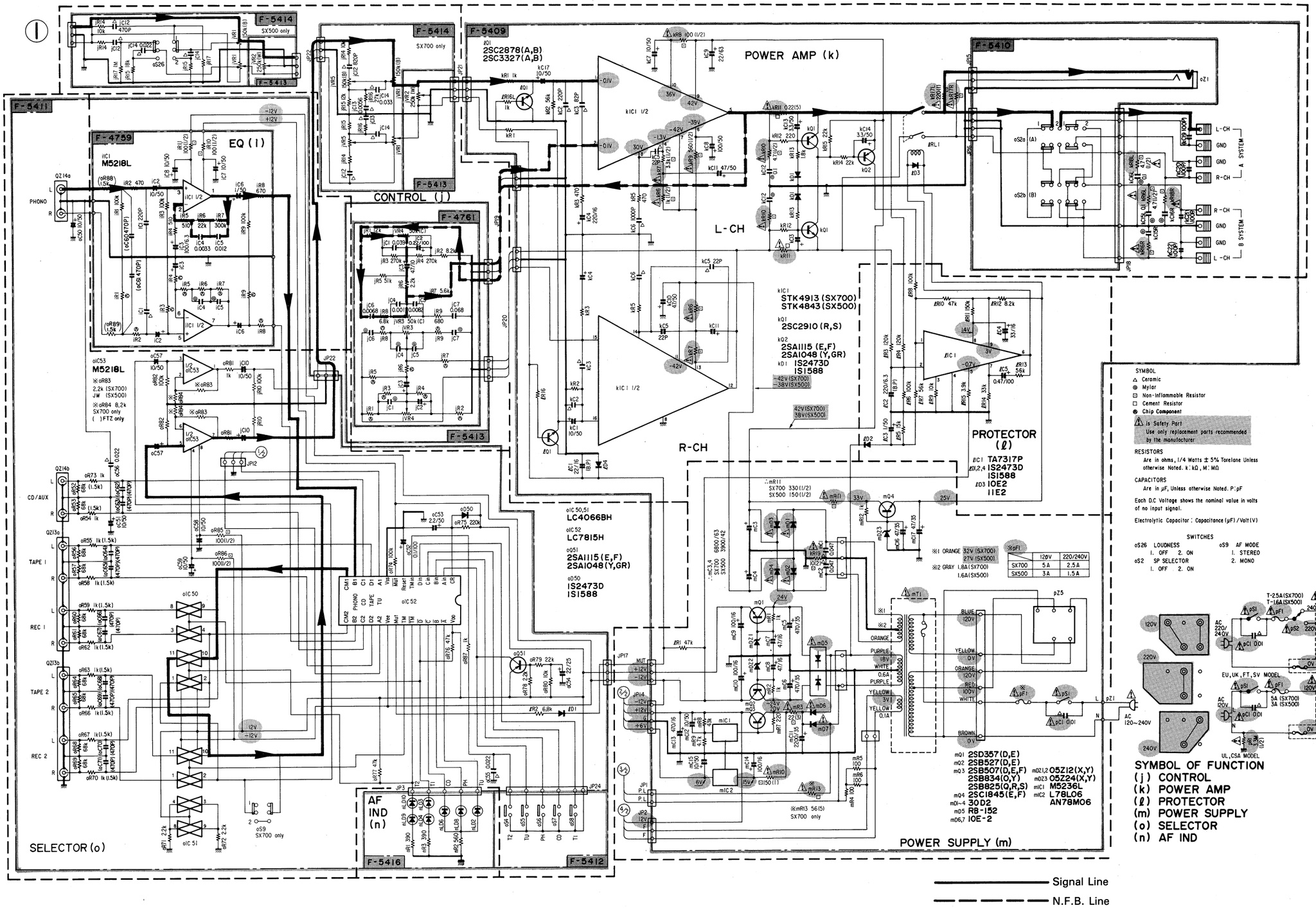
•LA1231N (IF & Quadrature Detector)



A	B	C	D	E	F	G	H

7-2. Amplifier Section

* Design and specifications subject to change without notice for improvement.
* La présention et les spécifications sont susceptibles d'être modifiées sans préavis par suites d'améliorations éventuelles.
* Änderungen, die dem technischen Fortschritt dienen, bleiben vorbehalten.



SYMBOL
△ Ceramic
◉ Mylar
⊡ Non-inflammable Resistor
□ Cement Resistor
⊕ Chip Component
⚠ is Safety Part
Use only replacement parts recommended by the manufacturer

RESISTORS
Are in ohms, 1/4 Watts ± 5% Torelane Unless otherwise Noted. k: kΩ, M: MΩ

CAPACITORS
Are in μF, Unless otherwise Noted. P: pF

Each D.C Voltage shows the nominal value in volts of no input signal.

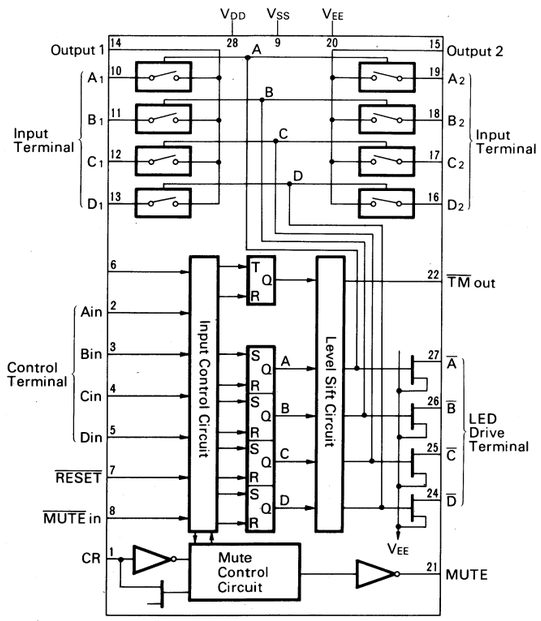
Electrolytic Capacitor : Capacitance (μF) / Volt (V)

SWITCHES
oS26 LOUDNESS 1. OFF 2. ON
oS2 SP SELECTOR 1. OFF 2. ON
oS9 AF MODE 1. STEREO 2. MONO

2SC1845 2SC2878 2SB527 2SB834 2SD357 TA7317P
2SC2910 TD6104P
2SB507 2SB825
M5218L
2SK117 2SK163
2SA1048 2SA1115 2SC2458 2SC2603 2SC2785 2SC3327 DTA124ES DTC124ES
L78N06
2SC2786
STK4843 STK4913 BA6104
LA1231N LA1245 LA3410A LC7815H LC4066BH TC9157AP TD6301AP
AN78M06
Dot or Slit or Line
DT5C144E
M5236L
RB-152
KV1236Z2
MC921
RLS-73
1S1588 1S2473D 10E2 30D2
05Z12 05Z24

S-X700/X500

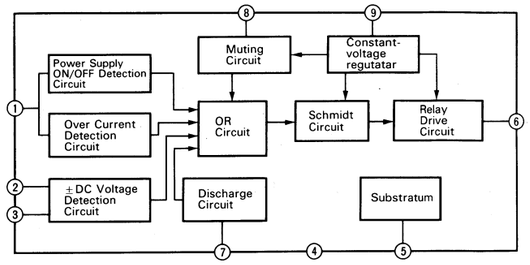
•LC7815H/LC7816 (Analog Function SW.)



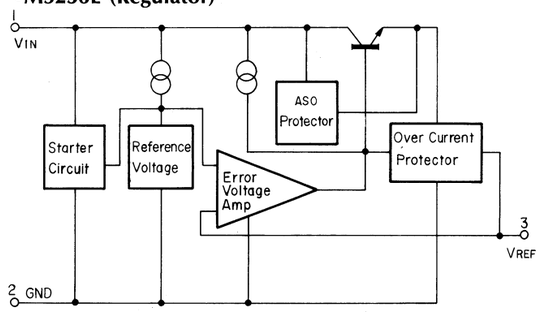
Condition of control input terminals Port (Pin No.)				Connected input terminal to output 1 and 2 terminals		Connected terminal to LED indicator
Ain (2)	Bin (3)	Cin (4)	Din (5)	PORT (Pin No.)	PORT (Pin No.)	PORT (Pin No.)
H	*	*	*	A1 (10)	A2 (19)	A (27)
L	H	*	*	B1 (11)	B2 (18)	B (28)
L	L	H	*	C1 (12)	C2 (17)	C (25)
L	L	L	H	D1 (13)	D2 (16)	D (24)

H: H level L: L level *: Don't care

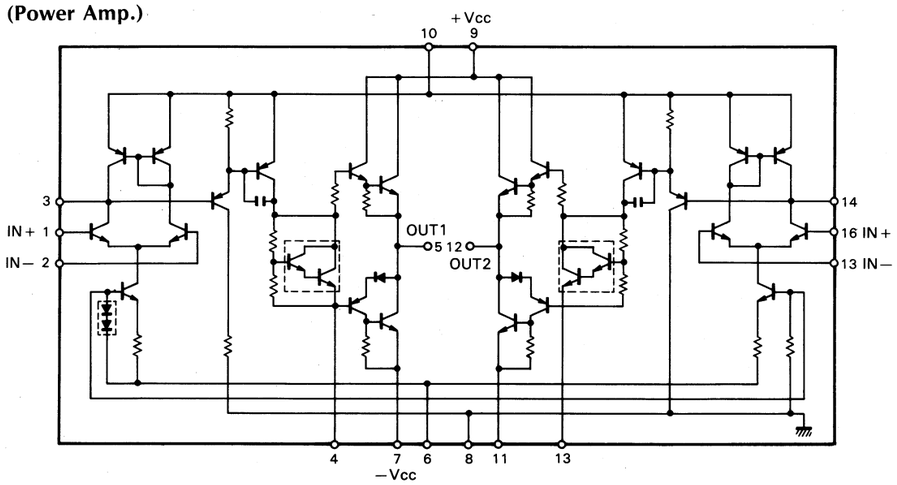
•TA7317P (Protector)



•M5236L (Regulator)

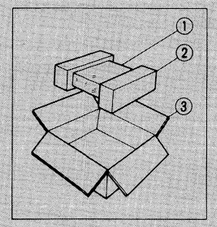


•STK4913 (Power Amp.)
•STK4843



8. PACKING LIST

Parts No.	Stock No.	Description
1	47859600	Vinly Bag
2	27206800	Styrofoam Packing (Right)
3	27283500	Styrofoam Packing (Left)
4	27206600	Carton Case (S-X700)
	27206700	Carton Case (S-X500)



9. ACCESSORY LIST

Stock No.	Description
46051700	FM Antenna
46186100	AM Loop Antenna
07563000	Antenna Holder
48489800	Matching Transformer (EU,UK,SEV)
49013000	S-X700/X500 Operating Instruction (*E·F·S)
49013100	S-X700/X500 Operating Instruction (*G·I·Sw)

***Note:**
E·F·S: **E**nglish·**F**rench and **S**panish Version
G·I·Sw: **G**erman·**I**talian and **Sw**edish Version

Sansui

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